# WISCONSIN DEPARTMENT OF NATURAL RESOURCES Wisconsin's 2020 Open Water Sportfishing Effort And Harvest From Lake Michigan And Green Bay

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#### **OVERVIEW**

The Wisconsin Department of Natural Resources (DNR) documented the sport fishery in Wisconsin waters of Lake Michigan and Green Bay from May 2020 through November 2020.

Due to the COVID-19 pandemic, charter fishing trips began in May, along with the moored-boat survey. The DNR creel clerks began the creel survey in July. Therefore, 2020 results are for May through November only and should be considered when comparing 2020 to previous years.

Fishing effort, harvest and harvest rates were determined from 1) a stratified-random creel survey of launched-boat, pier, shore and stream anglers; 2) a randomized mail survey of moored-boat anglers; and 3) mandatory charter-boat reporting. For a detailed description of methods, see Eggold, 1995.

#### **RESULTS**

Anglers spent an estimated 1,951,303 hours fishing on Lake Michigan and Green Bay during 2020, with the boat-angler effort at 1,602,361 hours or 82% of the total hours. Estimated angler hours for the pier fishery were 81,437 hours, 109,117 angler hours for the shore fishery and 158,388 hours for the stream fishery. Note that the stream fishery estimates do not include the spring.

The estimated harvest of 566,446 fish was dominated by yellow perch (250,498) followed by walleye (88,699). Walleye and yellow perch harvest combined for 59% of the total estimated harvest.

The boat fishery, comprised of launched-boat, moored-boat and charter-boat anglers, dominated the fishery by harvesting an estimated 516,202 fish or 91% of the total harvest by yellow perch (229,246), followed by walleye (86,309). Pier anglers harvested 7,726 fish, primarily yellow perch (6,641) and Chinook salmon (685), followed by rainbow trout (181).

Stream anglers harvested 28,134 fish, dominated by Chinook salmon (17,769) and followed by yellow perch (5,242) and walleye (2,352). Shore anglers harvested 14,384 fish, primarily yellow perch (9,549), followed by Chinook salmon (3,316).

Overall harvest rates were highest for yellow perch at 0.1284 fish/hour, followed by walleye (0.0455 fish/hour) and Chinook salmon (0.0412 fish/hour). These three species also had the highest harvest rates in 2019.

The 2020 Chinook harvest of 80,453 fish was higher than 2019's harvest but approximately 57% below the ten-year average. The overall harvest rate for salmonids in 2020 was 0.1111, which is only slightly below the ten-year average harvest rate of 0.1353.

Coho harvest in 2020 was 40,349 fish, which was an increase from the 2019 harvest. The 2020 rainbow trout harvest of 54,430 fish was also an increase from 2019, but approximately 16% below the ten-year average. Brown trout harvest in 2020 was 3,317, which was 79% below the ten-year average. A total of 38,271 lake trout were harvested in 2020, which was 39% above the ten-year average.

The 2020 harvest of yellow perch in Green Bay was 248,485, which was 73% above the ten-year average and the highest harvest since 2013. The Lake Michigan yellow perch harvest in 2020 was 2,013 fish. Perch harvest in Lake Michigan remains on an overall downward trend observed since 1993.

Biological data was not collected from sport-caught fish in 2020. Biological data collection has resumed for 2021, and the average weight, length and standard weight of sport-caught salmonids will be calculated after the end of the creel season.

### REFERENCES

Eggold, B.T. 1995. Wisconsin's 1995 open water sportfishing effort and catch from Lake Michigan and Green Bay. Wisconsin Department of Natural Resources, Plymouth, Wisconsin. 18 pages.

Table 1. Estimated angler effort (hours) by location in Wisconsin waters of Lake Michigan and Green Bay during March through December of 2011 through 2020\*. Standard deviations are in italics.

Location	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Kenosha Co.	116,032	135,980	128,865	130,028	101,115	109,277	90,700	92,655	99,315	91,284	109,525
	5,801	2,851	5,255	5,420	5,005	5,481	3,810	4,185	4,417	4,796	4,779
Racine Co.	151,135	131,342	122,651	122,670	102,899	107,400	90,695	110,575	98,387	78,832	111,659
	7,225	10,091	8,484	7,070	8,988	7,777	6,559	11,954	6,374	6,721	8,301
Milwaukee Co.	276,843	324,011	290,866	255,180	266,000	296,612	267,191	233,031	180,123	179,950	256,981
	15,204	14,704	11,427	10,870	10,079	12,556	14,736	13,192	8,028	10,876	12,366
Ozaukee Co.	256,961	208,450	203,739	190,049	172,696	215,442	179,360	167,683	156,411	160,473	191,126
	19,364	12,203	9,651	9,525	8,333	13,704	13,185	10,435	10,337	8,465	11,943
Sheboygan Co.	199,350	225,384	206,006	213,716	216,025	211,476	179,246	163,946	176,289	148,393	193,983
	<sub>9,537</sub>	11,503	9,124	10,111	11,712	11,733	9,027	9,813	<sub>16,500</sub>	9,719	11,082
Manitowoc Co.	179,525	212,739	178,186	188,585	169,683	185,257	139,241	141,366	132,408	141,855	166,885
	8,336	10,796	8,370	9,482	8,250	10,330	7,010	8,009	6,735	12,573	9,151
Kewaunee Co.	323,860	311,407	373,777	355,094	366,474	290,327	318,589	327,150	222,088	236,238	312,500
	12,740	7,780	14,969	15,390	15,312	13,069	13,337	13,794	9,598	11,412	<sub>12,960</sub>
E. Door Co.	151,136	204,549	197,007	173,099	217,815	204,727	193,014	187,941	181,342	127,333	183,796
	7,001	23,159	12,272	9,008	3,414	10,731	9,108	10,802	12,741	10,704	11,918
Green Bay	886,143	771,724	1,078,064	991,943	1,115,376	1,007,835	1,084,806	1,025,001	1,113,129	786,945	986,097
	40,835	26,553	46,108	46,490	36,343	35,109	40,350	34,182	38,727	30,137	37,971
Total Effort	<b>2,540,985</b> 1,078,852	<b>2,525,586</b> <i>1,007,276</i>	<b>2,779,161</b> <i>1,254,071</i>	<b>2,620,364</b> 1,163,802	<b>2,728,083</b> <i>1,273,837</i>	<b>2,628,353</b> <i>1,174,243</i>	<b>2,542,842</b> <i>1,219,462</i>	<b>2,449,348</b> 45,598	<b>2,359,492</b> 47,992	<b>1,951,303</b> <i>40,789</i>	<b>2,601,555</b> 979,811

<sup>\*</sup>Note: Sport Fishing estimates for 2020 are for May – December only.

Table 2. Estimated harvest and total harvest rate (number per hour, all anglers combined) of salmonids in Wisconsin waters of Lake Michigan and Green Bay during March through December of 2011 through 2020\*. Standard deviations are in italics.

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Coho salmon	157,367 11,432	73,395 3,114	89,061 3,927	52,297 6,572	41,010 4,329	125,964 5,552	119,686 7,135	85,411 5,175	32,197 2,003	40,349 2,585	81,674 5,805
Chinook salmon	169,752 4,083	390,385 9,058	145,301 4,363	130,698 3,587	113,973 3,479	139,082 4,724	83,873 3,125	84,142 3,262	62,916 4,011	80,453 3,782	140,058 4,646
Rainbow trout	75,442 2,588	75,981 2,592	58,311 1,969	73,105 2,286	59,106 1,707	76,846 2,897	66,441 2,659	57,095 2,011	50,254 3,105	54,430 1,996	64,701 2,420
Brown trout	9,936 846	21,337 1,768	17,094 1,303	23,324 1,785	20,174 1,899	23,879 2,589	20,398 1,716	12,529 1,112	7,985 968	3,317 519	15,997 1,563
Brook trout	26 0	18 0	0 <i>o</i>	0 0	0 0	0 0	0 <i>o</i>	0 <i>o</i>	0 0	0 <i>o</i>	<b>4</b> <i>o</i>
Lake trout	17,788 1,236	29,094 1,261	27,240 1,005	25,425 1,098	35,715 1,460	19,137 868	20,345 1,115	26,747 1,236	34,197 2,438	38,271 1,645	27,396 1,401
Total Harvest	<b>430,311</b> <i>12,502</i>	<b>590,210</b> <i>10,158</i>	<b>337,007</b> <i>6,406</i>	<b>304,849</b> <i>8,104</i>	<b>269,978</b> <i>6,285</i>	<b>384,908</b> <i>8,306</i>	<b>310,743</b> <i>8,481</i>	<b>265,924</b> <i>6,651</i>	<b>187,549</b> <i>15,589</i>	216,820	<b>351,885</b> 9,543
Harvest-Rate	0.1693	0.2337	0.1213	0.1163	0.0990	0.1464	0.1222	0.1086	0.0795	0.1111	0.1353

<sup>\*</sup>Note: Sport Fishing estimates for 2020 are for May – December only.

Table 3. Estimated harvest and total harvest rate (number per hour, all anglers combined) of yellow perch in Wisconsin waters of Lake Michigan and Green Bay during March through December of 2011 through 2020\*. Standard deviations are in italics.

Location	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Green Bay	254,942 24,973	148,980 13,685	215,422 18,974	118,980 12,283	93,964 9,780	72,223 8,923	117,412 12,404	108,971 11,011	82,052 15,561	248,485 23,620	143,894 16,038
Harvest-Rate	0.1003	0.0590	0.0775	0.0454	0.0344	0.0275	0.0462	0.0445	0.0348	0.1273	0.0597
Lake Michigan	16,982 2,296	9,115 1,071	8,830 1,221	8,174 1,108	5,358 1,021	2,132 607	2,481 537	3,229 787	3,600 <sub>919</sub>	2,013 691	6,191 1,130
Harvest-Rate	0.0103	0.0052	0.0052	0.0050	0.0033	0.0013	0.0017	0.0023	0.0029	0.0017	0.0038
Total Harvest	<b>271,924</b> <i>25,078</i>	<b>158,095</b> <i>13,727</i>	<b>224,252</b> 19,013	<b>127,154</b> <i>12,333</i>	<b>99,322</b> <i>9,834</i>	<b>74,355</b> <i>8,944</i>	<b>119,893</b> <i>12,416</i>	<b>112,200</b> <i>11,040</i>	<b>85,652</b> <i>15,588</i>	<b>250,498</b> 23,631	<b>155,011</b> <i>15,787</i>
Harvest-Rate	0.1070	0.0626	0.0807	0.0485	0.0364	0.0283	0.0471	0.0458	0.0363	0.1284	0.0596

Note: Table 3 reflects that some Door County sites represent Green Bay for yellow perch harvest statistics.

<sup>\*</sup>Note: Sport Fishing estimates for 2020 are for May – December only.

Table 4. Estimated harvest rate (harvest per hour), harvest and effort for all survey areas and **ALL FISHERY TYPES** for Wisconsin waters of Lake Michigan and Green Bay during 2020. Standard deviations are in italics.

Species	Harvest per hour	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho salmon	0.0207	5,325 2,110	15,864 518	10,152 927	6,617 988	2,391 <sup>355</sup>	0 0	40,349 2,585
Chinook salmon	0.0412	934 546	9,175 485	18,359 1,374	18,234 1,266	33,751 3,208	<b>0</b> <i>o</i>	80,453 3,782
Rainbow trout	0.0279	1,624 <sup>397</sup>	15,076 610	17,580 1,411	18,055 1,181	2,095 257	<b>0</b> 0	54,430 1,996
Brown trout	0.0017	306 266	225 64	920 270	862 182	1,004 298	<b>0</b> <i>o</i>	3,317 519
Brook trout	0.0000	0 0	0 0	<b>0</b> <i>o</i>	0 0	<b>0</b> <i>o</i>	<b>0</b> <i>o</i>	0 0
Lake trout	0.0196	1,908 268	6,659 415	12,125 1,033	14,907 1,165	2,672 189	<b>0</b> <i>o</i>	38,271 1,645
Northern pike	0.0008	0 0	0 0	197 107	536 247	759 199	<b>0</b> <i>o</i>	1,492 335
White perch	0.0005	<b>0</b> <i>o</i>	0 0	94 83	648 540	178 138	<b>0</b> <i>o</i>	920 564
Smallmouth bass	0.0041	206 173	263 137	3,604 1,635	3,634 1,003	310 112	<b>0</b> <i>o</i>	8,017 1,934
Yellow perch	0.1284	57 39	260 113	29,764 6,773	113,219 17,846	107,198 13,928	<b>0</b> <i>o</i>	250,498 23,630
Walleye	0.0455	0 0	323 142	54,509 5,405	27,757 4,321	6,110 1,464	<b>0</b> <i>o</i>	88,699 7,075
Total Harvest	0.2903	<b>10,360</b> 2,254	<b>47,845</b> 1,051	<b>147,304</b> 9,146	<b>204,469</b> 18,544	<b>156,468</b> <sub>14,381</sub>	<b>0</b>	<b>566,446</b> <i>25,309</i>
Angler Hours		24,066 4,270	136,858 5,164	651,881 23,224	634,639 28,245	503,859 16,784	0 0	1,951,303 40,789

Table 5. Estimated harvest rate (harvest per hour), harvest and effort for the **BOAT FISHERY** with all surveys combined for Wisconsin waters of Lake Michigan and Green Bay during 2020. Standard deviations are in italics.

Species	Harvest per hour	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho salmon	0.0240	5,325 2,110	15,864 518	10,152 927	6,479 <sup>978</sup>	705 246	0 0	38,525 2,568
Chinook salmon	0.0366	934 541	9,175 <sup>485</sup>	18,321 1,374	18,022 1,261	12,231 2,728	0 <i>o</i>	58,683 3,384
Rainbow trout	0.0337	1,624 <sup>397</sup>	15,076 610	17,554 1,411	18,041 1,181	1,668 219	0 <i>o</i>	53,963 <sub>1,991</sub>
Brown trout	0.0016	306 265	225 64	762 247	862 182	488 91	0 0	2,643 420
Brook trout	0.0000	0 0	0 0	<b>0</b> <i>o</i>	0 0	0 0	<b>0</b> <i>o</i>	0 <i>o</i>
Lake trout	0.0239	1,908 268	6,659 415	12,125 1,033	14,907 1,165	2,672 189	0 0	38,271 1,645
Northern pike	0.0007	0 0	0 0	144 102	514 246	521 182	<b>0</b> <i>o</i>	1,179 322
White perch	0.0004	0 0	0	0 0	648 540	33 33	0 0	681 541
Smallmouth bass	0.0042	206 173	263 137	3,583 1,635	2,457 995	193 98	0 0	6,702 1,929
Yellow perch	0.1431	57 39	260 113	27,011 6,761	111,372 17,833	90,546 13,571	0 0	229,246 23,408
Walleye	0.0539	0 0	323 142	54,509 5,405	27,757 4,321	3,720 957	0 0	86,309 6,987
Total Harvest	0.3222	<b>10,360</b> 2,253	<b>47,845</b> 1,051	<b>144,161</b> 9,136	<b>201,059</b> <i>18,530</i>	<b>112,777</b> <i>13,883</i>	<b>0</b>	<b>516,202</b> 25,015
Angler Hours		24,066 4,270	136,858 5,165	605,760 22,981	583,896 27,908	251,781 13,851	0 0	1,602,361 39,290

Table 6. Estimated harvest rate (harvest per hour), harvest and effort for the **PIER FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2020. Standard deviations are in italics.

Species	Harvest per hour	July	August	Sept/Oct	Nov/Dec	Season
Coho salmon	0.0005	0 0	0 0	42 30	0 0	<b>42</b> 30
Chinook salmon	0.0084	38 24	98 49	549 228	0 <i>o</i>	685 234
Rainbow trout	0.0022	26 21	<b>0</b> <i>o</i>	155 79	0 0	181 82
Brown trout	0.0019	158 110	<b>0</b> <i>o</i>	0 0	<b>0</b> <i>o</i>	158 110
Brook trout	0.0000	0 0	0 <i>o</i>	0 0	<b>0</b> <i>o</i>	0 0
Lake trout	0.0000	0 0	<b>0</b> <i>o</i>	0 0	<b>0</b> <i>o</i>	0 0
Northern pike	0.0008	<b>0</b> <i>o</i>	<b>0</b> <i>o</i>	65 <i>o</i>	<b>0</b> <i>o</i>	65 0
White perch	0.0000	0 0	<b>0</b> <i>o</i>	0 0	<b>0</b> <i>o</i>	0 0
Smallmouth bass	0.0012	<b>0</b> <i>o</i>	<b>0</b> <i>o</i>	96 50	<b>0</b> <i>o</i>	96 50
Yellow perch	0.0793	2,267 173	269 179	3,925 348	0 0	6,461 428
Walleye	0.0005	0 0	0 0	38 41	0 0	38 41
Total Harvest	0.0949	<b>2,489</b> 207	<b>367</b>	<b>4,870</b> 429	<b>0</b>	<b>7,726</b> 512
Angler Hours		22,706 2,273	25,556 2,945	33,175 3,847	<b>0</b>	81,437 5,352

Table 7. Estimated harvest rate (harvest per hour), harvest and effort for the **SHORE FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2020. Standard deviations are in italics.

Species	Harvest per hour	July	August	Sept/Oct	Nov/Dec	Season
Coho salmon	0.0073	0 0	138 141	656 176	0 0	794 226
Chinook salmon	0.0304	0 0	114 98	3,202 352	0 <i>o</i>	3,316 365
Rainbow trout	0.0022	0 <i>o</i>	14 14	231 106	0 <i>o</i>	245 107
Brown trout	0.0010	0 0	0 <i>o</i>	105 67	0 <i>o</i>	105 <i>67</i>
Brook trout	0.0000	<b>0</b> <i>o</i>	<b>0</b> <i>o</i>	0 0	0 <i>o</i>	0 <i>o</i>
Lake trout	0.0000	0 <i>o</i>	0 <i>o</i>	0 o	0 <i>o</i>	0 <i>o</i>
Northern pike	0.0015	53 33	22 15	84 52	0 <i>o</i>	159 63
White perch	0.0000	0 0	0 <i>o</i>	0 0	0 <i>o</i>	0 <i>o</i>
Smallmouth bass	0.0020	21 23	195 132	0 o	0 0	216 134
Yellow perch	0.0875	235 236	92 71	9,222 2,784	0 0	9,549 2,795
Walleye	0.0000	0 0	0 <i>o</i>	0 o	0 0	0 0
Total Harvest	0.1318	<b>309</b> 239	<b>575</b> 229	<b>13,500</b> 2,815	<b>0</b>	<b>14,384</b> 2,834
Angler Hours		18,399 2,324	16,484 2,983	<b>74,234</b> <i>4,307</i>	<b>0</b> <i>o</i>	109,117 5,731

Table 8. Estimated harvest rate (harvest per hour), harvest, and effort for the **STREAM FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2020. Standard deviations are in italics.

Species	Harvest per hour	July	August	Sept/Oct	Nov/Dec	Season
Coho salmon	0.0062	0 0	<b>0</b> <i>o</i>	988 183	<b>0</b> <i>o</i>	988 183
Chinook salmon	0.1122	0 <i>o</i>	0 0	17,769 <sub>1,634</sub>	0 <i>o</i>	17,769 1,634
Rainbow trout	0.0003	0 <i>o</i>	0 0	41 22	0 <i>o</i>	41 22
Brown trout	0.0026	0 0	0 <i>o</i>	411 276	0 <i>o</i>	<b>411</b> <i>276</i>
Brook trout	0.0000	0 0	0 0	0 o	<b>0</b> <i>o</i>	0 <i>o</i>
Lake trout	0.0000	0 0	0 0	0 o	0 <i>o</i>	0 <i>o</i>
Northern pike	0.0006	0 0	0 0	89 89	0 <i>o</i>	89 89
White perch	0.0015	94 83	0 0	145 135	0 <i>o</i>	239 <sub>158</sub>
Smallmouth bass	0.0063	0 0	982 0	<b>21</b> 15	0 <i>o</i>	1,003 15
Yellow perch	0.0331	251 278	1,486 661	3,505 <sub>1,398</sub>	0 <i>o</i>	5,242 1,571
Walleye	0.0148	0 0	0 0	2,352 1,107	<b>0</b> <i>o</i>	2,352 1,107
Total Harvest	0.1776	<b>345</b> 290	<b>2,468</b> 661	<b>25,321</b> 2,447	<b>0</b> <i>o</i>	<b>28,134</b> 2,551
Angler Hours		5,016 821	8,703 <sub>1,184</sub>	144,669 7,517	<b>0</b> <i>o</i>	158,388 7,654

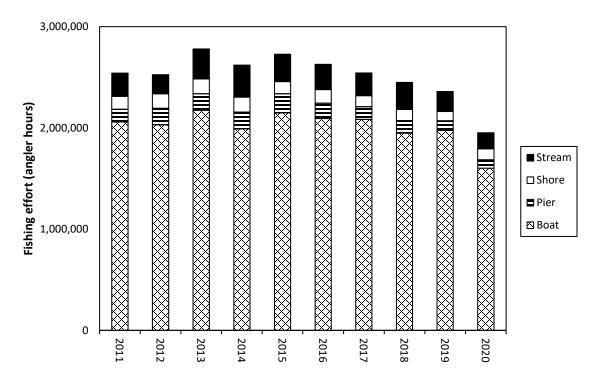


Figure 1. Fishing effort (angler hours) in Wisconsin waters of Lake Michigan and Green Bay from 2011 through 2020. \*Note: Sport Fishing estimates for 2020 are for May – December only.

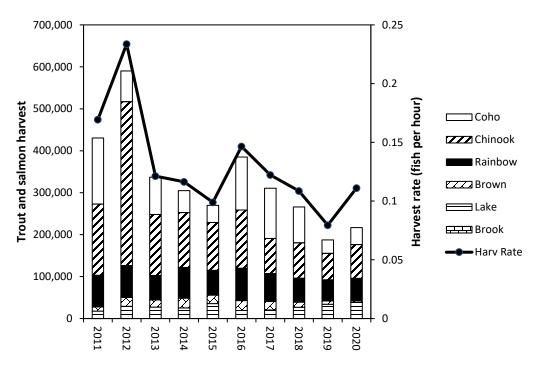


Figure 2. Trout and salmon harvest and harvest rate from Wisconsin waters of Lake Michigan and Green Bay from 2011 through 2020. \*Note: Sport Fishing estimates for 2020 are for May – December only.

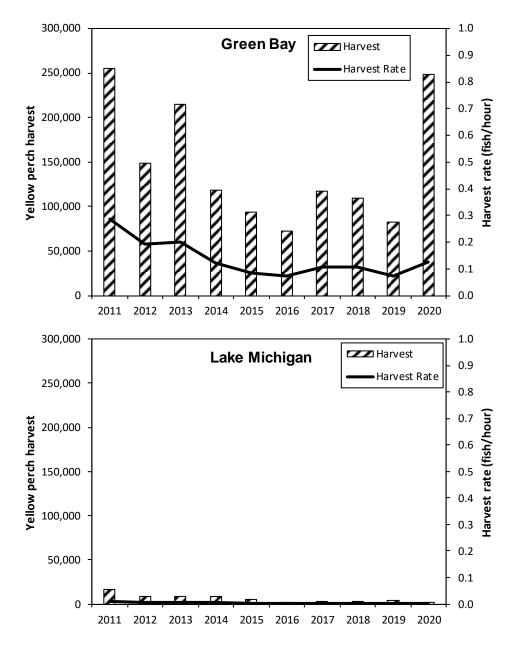


Figure 3. Yellow perch angler-harvest and harvest rate from Wisconsin waters of Green Bay and Lake Michigan from 2011 through 2020. Note: Figure 3 reflects that some Door County sites represent Green Bay for yellow perch harvest statistics. \*Note: Sport Fishing estimates for 2020 are for May – December only.